REMARKS

Support for the Amendments

The amendments are fully supported in the specification as filed and thus do not constitute new matter. The amendment to claim 13(c) to introduce "number" corrects a previous typographical error and is supported, for example, on page 13 lines 22-24 and Figure 7. The amendment to introduce "subcellular" is supported throughout the application, for example, page 12 lines 30-31 specifically states the term "sub-cellular," while the specification provides extensive discussion of such sub-cellular image data; see, for example, page 12 lines 1-31 (examples of sub-cellular image data: total fluorescent intensity within the nucleus; area of the cell nucleus for the primary marker; shape of the nucleus for the primary marker; average fluorescent intensity within the nucleus for other markers; total fluorescent intensity of cytoplasm for other markers; etc.) Examples 1 and 2 provide detailed examples of such subcellular image data, while page 19 lines 1-17 provide teachings regarding extending the exemplary embodiments.

Thus, none of the amendments represent new matter.

In formation Disclosure Statement

The patent office asserted that the information disclosure statement filed March 25, 2005 failed to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP 609, because references 68-69, 71-72, 77, 87, 98, and 109 lack publication dates. The patent office thus refused to consider these publications as to the merits.

The applicants herewith submit a revised IDS of the above-listed references, providing the publication date where known, and otherwise providing the date of printing. The applicants respectfully request consideration of these references, which have not been resubmitted since the patent office indicated they had been received and placed into the file.

Claim Objection

The patent office objected to claim 13 based on the assertion that the phrase "a desired arrays of wells" is awkward, as it contains the singular word "a" with multiple words in plural form. Applicants have amended claim 13 to obviate this objection.

Claim rejections under 35 USC 112 first paragraph

The Patent Office rejected claims 24-25 under 35 USC 112 first paragraph for failing to meet the written description requirement, based on the assertion that the claims represent new matter. Applicants traverse this rejection.

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. Newly added claim limitations must be supported in the specification through express, ***implicit, or inherent disclosure***. The subject matter of the claim ***need not be described literally*** (i.e., using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement. Furthermore, what is conventional or well known to one of ordinary skill in the art need not be disclosed in detail. ***If a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described in the specification, then the adequate description requirement is met.*** (MPEP 2163)

Specifically, the patent office has asserted that the following terms do not have written support in the application as filed:

(a) Perimeter: The patent office asserted that the specification provides support for "perimeter squared area" but not "perimeter." As stated in MPEP 2163, the written description requirement is met if a newly added claim limitation is supported by ***implicit, or inherent disclosure***; the subject matter of the claim ***need not be described literally*** in order for the disclosure to satisfy the description requirement; and ***if a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described in the specification, then the adequate description requirement is met.*** As admitted by the patent office, the specification provides support for "***perimeter*** squared area." As would

be understood by those of skill in the art, determining "perimeter squared area" necessarily includes determining "perimeter." Thus, those of skill in the art would understand that "perimeter" is, at the least, implicitly and/or inherently disclosed and that applicants were in possession of perimeter. Thus, it is clear that the specification provides adequate written description for "perimeter" under MPEP 2163, and the applicants respectfully request reconsideration and withdrawal of the rejection

(b) Height: The patent office asserted that the specification provides support for "height width ratio" but not "height." As admitted by the patent office, the specification provides support for "***height*** width ratio." As would be understood by those of skill in the art, determining "height width ratio" necessarily involves determining "height." Thus, those of skill in the art would understand that "height" is, at the least, implicitly and/or inherently disclosed and that applicants were in possession of height. Thus, it is clear that the specification provides adequate written description for "height" under MPEP 2163, and the applicants respectfully request reconsideration and withdrawal of the rejection

(c) Width: The patent office asserted that the specification provides support for "height width ratio" but not "width." As admitted by the patent office, the specification provides support for "height ***width*** ratio." As would be understood by those of skill in the art, determining "height width ratio" necessarily involves determining "width." Thus, those of skill in the art would understand that "width" is, at the least, implicitly and/or inherently disclosed and that applicants were in possession of width. Thus, it is clear that the specification provides adequate written description for "width" under MPEP 2163, and the applicants respectfully request reconsideration and withdrawal of the rejection.

(d) Ratio of fluorescent intensities: The patent office asserted that the specification provides support for "ratio of the average fluorescent intensity of the cytoplasmic mask to the average fluorescent intensity within the cell nucleus for colors 2-4" but not for "ratio of fluorescent intensities."

As argued in the previous response, the specification clearly provides explicit examples of using ratios of fluorescent intensities in the cytoplasm-nucleus translocation assays, as acknowledged by the Patent Office. The specification clearly provides

disclosure of other translocation and reorganization assays, such as translocation between cytoplasm and plasma membrane, that can be developed based on these teachings. See, for example, page 19 lines 3-15 of the specification which states as follows:

> "Those skilled in the art will ***recognize a wide variety of distinct screens that can be developed based on the disclosure provided herein***. There is a large and growing list of known biochemical and molecular processes in cells that involve ***translocations or reorganizations of specific components within cells***. The signaling pathway from the cell surface to target sites within the cell involves the ***translocation of plasma membrane-associated proteins to the cytoplasm***. For example, it is known that one of the src family of protein tyrosine kinases, pp60c-src (Walker et al (1993), *J. Biol. Chem.* 268:19552-19558) translocates from the plasma membrane to the cytoplasm upon stimulation of fibroblasts with platelet-derived growth factor (PDGF). In contrast, some cytoplasmic components ***translocate*** from the ***cytoplasm to the plasma membrane*** upon stimulation of cells....In addition, ***specific organelles***, such as components of the cytoskeleton, nuclear envelope, chromatin, golgi apparatus, mitochondria, and endosomes are ***reorganized*** in response to specific stimuli."

The Applicants argued in the previous response that it would thus be clear to those of skill in the art that the applicants had possession of other translocation assays as of the filing date of the invention, and that, as in the cytoplasm-nucleus translocation assays, ratios of fluorescent intensities could be used in these other translocation assays.

In response, the patent office states in the current office action "Applicants cite several passages on pages 12 and 19, but these passages fail to mention ratios." As an initial matter, this is incorrect, as the patent office has already admitted support for ratios of fluorescent intensities between cytoplasm and nucleus. Furthermore, the disclosure from page 19 recited above specifically states that "Those skilled in the art will ***recognize a wide variety of distinct screens that can be developed based on the disclosure provided herein."*** This necessarily includes the determination of ratios of fluorescent intensities between organelles as exemplified on page 12 of the specification. The applicants go on to list another exemplary translocation assay on page 19, that between cytoplasm and plasma membrane. Thus, those of skill in the art would be aware that applicants were in possession of, for example, translocation assays between different organelles, which can be practiced according to the disclosure, including determining ratios of fluorescent intensities. This clearly meets the written description requirements of

35 USC 112 first paragraph. In contrast, the patent office standard applied here appears to be improperly limiting the applicants to the preferred embodiments.

Based on the above, the applicants respectfully request reconsideration and withdrawal of the rejection.

(e) Difference in fluorescent intensities: The patent office asserted that the specification provides support for "the different of the average fluorescent intensity of the cytoplasmic mask and the average fluorescent intensity within the cell nucleus for colors 2-4" but not for "differences in fluorescent intensities."

As argued above for "ratios" of fluorescent intensities, the specification clearly provides explicit examples of using differences in fluorescent intensities in the cytoplasm-nucleus translocation assays, as acknowledged by the Patent Office. The specification clearly provides disclosure of other translocation and reorganization assays, such as translocation between cytoplasm and plasma membrane, that can be developed based on these teachings. See, for example, page 19 lines 3-15 of the specification which states as follows:

> "Those skilled in the art will ***recognize a wide variety of distinct screens that can be developed based on the disclosure provided herein***. There is a large and growing list of known biochemical and molecular processes in cells that involve ***translocations or reorganizations of specific components within cells***. The signaling pathway from the cell surface to target sites within the cell involves the ***translocation of plasma membrane-associated proteins to the cytoplasm***. For example, it is known that one of the src family of protein tyrosine kinases, pp60c-src (Walker et al (1993), *J. Biol. Chem.* 268:19552-19558) translocates from the plasma membrane to the cytoplasm upon stimulation of fibroblasts with platelet-derived growth factor (PDGF). In contrast, some cytoplasmic components ***translocate*** from the ***cytoplasm to the plasma membrane*** upon stimulation of cells....In addition, ***specific organelles***, such as components of the cytoskeleton, nuclear envelope, chromatin, golgi apparatus, mitochondria, and endosomes are ***reorganized*** in response to specific stimuli."

Thus, it would thus be clear to those of skill in the art that the applicants had possession of other translocation assays as of the filing date of the invention, and that, as in the cytoplasm-nucleus translocation assays, differences in fluorescent intensities could be used in these other translocation assays. As noted above, the disclosure from page 19

recited above specifically states that "Those skilled in the art will ***recognize a wide variety of distinct screens that can be developed based on the disclosure provided herein."*** This necessarily includes the determination of differences in fluorescent intensities between organelles as exemplified on page 12 of the specification. The applicants go on to list another exemplary translocation assay on page 19, that between cytoplasm and plasma membrane. Thus, those of skill in the art would be aware that applicants were in possession of, for example, translocation assays between different organelles, which can be practiced according to the disclosure, including determining differences in fluorescent intensities. This clearly meets the written description requirements of 35 USC 112 first paragraph. In contrast, the patent office standard applied here appears to be improperly limiting the applicants to the preferred embodiments.

Based on the above, the applicants respectfully request reconsideration and withdrawal of the rejection.

(f) Number: The patent office asserted that the specification provides support for "number of cells" but not for "number." The applicants traverse the rejection but have amended the claims to obviate the rejection.

Claim rejections under 35 USC 112 second paragraph

The Patent Office rejected claims 13-25 under 35 USC 112 second paragraph as being indefinite. The Applicants traverse this rejection, but have nonetheless amended the claims to accelerate prosecution of this application. The Applicants further note that the amendment to recite "computer" system does not serve to limit the scope of the claim, as the term "system" recited in Claim 13 steps (b) and (c) clearly referred back to "computer system" as recited in the preamble.

Therefore, the Applicants respectfully request reconsideration and withdrawal of this rejection.

Claim rejections based on 35 USC 102(e)

The Patent Office rejected claims 13-24 under 35 USC 102(e)(2) over Nova et al. (US Pat. No. 5,961,923). The Applicants traverse this rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." (MPEP Section 2112, IV)

Presently pending claim 13 is recited above. Nova does not teach or suggest collecting image data from the cells in the wells, nor, as a result, any further steps involving image data, as recited in the presently pending claims. The patent office cites to column 51 line 61 to column 52 line 9 and lines 27-60 to support the assertion that Nova teaches image acquisition to monitor edges and peak signals, as well as determining the average intensity of each cell. However, the recited section (column 51 line 61 to column 52 line 9) teaches generating a "snap-shot" of the optical memory surface. This does not expressly refer to generating image data from cells in wells, nor does the section inherently anticipate generating image data from cells in wells (ie: it is not *necessarily present*). Furthermore, column 52 lines 27-60 (and corresponding Figure 31) involve determining edges and peaks for the ***symbol*** (see column 52 lines 45, 48, and 57). As noted in column 22 line 65-67, symbology refers to the code, such as a bar code, that is engraved or imprinted on the optical memory device. Clearly, this does not expressly refer to generating image data from cells in wells, nor does the section inherently anticipate generating image data from cells in wells (ie: it is not *necessarily present*). As a result, Nova does not teach or suggest, for example, any of the further limitations of claim 13(c)(ii-ix).

Thus, the Nova reference clearly is not a proper anticipatory reference. Nonetheless, the applicants have amended the claims to recite collection and processing of subcellular image data. Nothing in Nova provides any teaching or suggestion to

collect subcellular image data from cells in wells, and then further process the subcellular image data as recited in the present claims.

Based on all of the above, the applicants respectfully request reconsideration and withdrawal of this rejection.

If there are any questions or comments regarding this Response, the Patent Office is encouraged to contact the undersigned attorney as indicated below.

Respectfully submitted,

Date: 2/1/06

David S. Harper
Registration No. 42,636

McDonnell Boehnen
Hulbert & Berghoff, Ltd.
300 South Wacker Drive
Chicago, IL 60606

Telephone: 312-913-0001
Facsimile: 312-913-0002